ROSTISLAV HOLTHOER

Classification of pottery shapes - an experiment

"A potter,
- in mud is his lifetime,
besmeared more than a coriander-bush(?), a pig or a cooking-pot(?);
- in mud are his clothes,
stiff from spitting, a piece of scrap-linen as his loin cloth.
The wind from his kiln enters his nose continuously(?).
He tramples with his feet and crushes himself by it ..".

Hardships of a potter (Khetj, 6:7 - 9).

Introduction.

When he was my teacher of Assyriology, Professor Armas Salonen always emphasized the importance of a minutious study of archaeological material, commonly designated as mass products.

His own publications dealing with different aspects of the materialistic culture of ancient Mesopotamia, - too well known to be listed here, are pilot works of extreme importance about the everyday life of the ancient Mesopo-

tamians in general and the ancient Babylonians in particular, and will for a long time remain as the most essential sources for its study.

When preparing his work "Die Hausgeräte der alten Mesopotamier, Teil II:Gefässe" (Helsinki, 1966), Salonen was also planning to develop a method of pottery classification and often discussed with his colleagues and pupils the different problems emerging in connexion with these plans.

Unfortunately the preparation of his subsequent publications did not leave time for the realization of his classification project.

The author of the present article has, on the other hand, been involved since 1965 in the project of the Scandinavian Joint Expedition to Sudanese Nubia (SJE), initiated and directed by Professor Torgny Säve-Söderbergh of Uppsala University (Sweden), to develop new, logical and objective methods for the description as well as the subsequent qualitative and quantitative analysis of the traits occurring on the pharaonic wheel-made pottery found by the SJE in the district of Wadi Halfa in northern Sudan.

Consequently the views expressed in the following chapters derive from the study of the above mentioned material. A full account of the progress of this work will appear in Vol. 5 of the SJE Publications (Pharaonic sites), in the near future.

However, the methods developed in accordance with the demands of Nubian pottery can to some extent be applied to other pottery, e.g. Mesopotamian pottery. As many ideas used in my method of classification owe much to the encouragement obtained in discussions with Armas Salonen, I feel honoured that this short preliminary report has been accepted for publication in the present volume, which

gives me an occasion in this manner to express my appreciation of and my sincere thanks to my teacher and friend Armas Immanuel Salonen.

General methodology.

The most common way of writing about pottery has so far been to present the characteristics of the shape in corpuses, the drawings of the vessels usually being more or less subjectively arranged, from time to time using different criteria in the arrangement.

Of the existing works on pottery classification, some, although distinguishing particular shapes, do not define them (e.g. Adams, 1962 and 1964), others render very narrow limits of variability (e.g. Nordström, 1973 and Deopik, 1970).

Professor Deopik's classification, for instance, is because of the utilization of narrow-limited parametres hardly applicable for other than Crimean late bronze-age pottery.

Excellent methods for the taxonomy of the shapes of pottery have been developed by i.a. Braichevsky (1966), Gardin (1967), Shepard (1956) and Traunecker (1974), and to a certain extent used also by the SJE-team, but none of them has been extended to the presentation of a method of shape-classification.

This is probably due to the difficulty of the task: a very large amount of interrelated variables, measurements and proportion ratios have to be compared with each other, before the relationship of one shape to another can be established. The objectivity of the evaluation of the traits is often also disturbed by optical illusions, which leads to a certain amount of subjective estimation as i.a.

the Swedish scholar Sven Hasselgren (1954) has shown by his experiments with the visual estimation of certain shapes.

It should, however, be borne in mind that pottery produced by means of different fabrication methods, involving different production times, also calls for different approaches to classification. This statement is mainly based upon the fact that a potter using the hand method (i.a. coil-technique or turn-table) has more time at his disposal to accmplish an intented shape of an intended size for his product. A potter using a potter's wheel (simple or combined) has, on the other hand, almost no possibility to correct an eventual mistake otherwise than by compensating for it either by a change of the proportions of the upper parts of the vessel or by changing its size.

It is therefore to be expected that small changes in the proportions of the shape are much more likely to be intentional in the case of the slower hand-method than in the case of the faster wheel-method. Consequently, the method of shape classification, following the demands of the material, should in one case be more minutiously differentiating and in the other more general.

The method used by me for classifying the vertically symmetrical shapes of Nubian wheel-made pottery, consists of twelve stages, each one of which, in a fixed order, deals with one of the traits to be discussed in the following sections. The order of the stages and the traits encompassed by them is as follows:

1. Character.
2. Function indicator.
3. Contour.
4. Position of the major diameter (= Md).
5. Width of orifice.

6. Type of base (the main category).
7. Width of base.
8. Type of rim (the main category).
9. Height of neck.
10. Width of neck.
11. Width and depth of the vessel (shape index).
12. Transitions.

It is to be noted that it is not necessary to pass through every one of these stages. Were this to be done it is very possible that each vessel would constitute its own shape mode (cf. below). Some of the stages can be regarded as merely descriptive and not distributive, and can consequently be used as alternatives in the course of the shape classification. Other stages can be completely omitted if the trait encompassed by them does not occur in a particular shape defined by other traits and dealt with under other stages (e.g. the neck is not present under unrestricted shapes).

Shape.

The term "shape" is introduced to determine the silhouette of a vessel and thus does not include the finish and the decoration nor the properties of the ware.

It is confined only to the exterior surface of the vessels' walls and encompasses their components, i.e. the different curves and transitions, the rim and the base, as well as the ratios derived from their measurements.

As the shape or the size sometimes advocates a function, functional aspects have also to be dealt with, to a certain extent, in the classification of the shapes.

1. Character.

A vessel's character designates whether its shape is open, i.e. unrestricted (U) or closed, i.e. restricted (R) (Shepard, 1956, fig. 22).

In the case of the unrestricted vessels their major diameter (Md) is equal to their rim diameter (Rd).

In the case of the restricted vessels, their Md is larger than their Rd and is located somewhere below it.

Character, in combination with function indicators (cf. next section), is regarded as the initial classifier of the shapes - slightly different sequences of traits being used to define shapes of different character.

2. Function indicator.

The most preferable way of classifying shapes would be according to the function of the vessels. It is, however, not always possible to determine a uniform function of a certain shape, but this function can be indicated by certain traits which occur on the vessel, such as spout(s), hole(s), vertical or horizontal handle(s), a foot (on a vessel, turned upside down, determined in a similar way as the neck, by means of a deviation point [cf. next section: "Restricted, necked contours"]) and sometimes a very large or a very small size in combination with certain characteristics of the quality of fabrication.

It is to be noted that a determination of i.a. "knob handles" (e.g. Salonen, 1966, Pls LXXVII:10 and 12 or CXLVI:4 and 6) not as decorative but as function indicators, is a convention based upon their resemblance to real vertical loop-handles (Ibid. Pls. LXXIX:6, LXXVII:7 and LXXVIII:12 and 16).

The traits qualified as "function indicators" permit a primary selection of vessels with similar functional aspects into independent categories prior to shape classifications proper.

3. Contour.

Contour designates the configuration of the exterior surface of the vessel's wall, excluding the rim and the base (cf. 6 and 7, below).

It is made up of concave and convex curves with different inclinations. These curves have either smooth or angular transitions or those consisting of a ledge (cf. 12, "Transitions", below).

All properties of the contour are estimated from the lateral aspect (Nordström, 1973, p. 69) in relation to the vertical symmetry axis.

For the classification of the shapes of Nubian wheel-made pottery, it has in most cases proved to be sufficient to deal with only the elaboration of the uppermost portion of the vessel, i.e. the part of the contour immediately below the rim.

This part is regarded as a "pars pro toto" and is allowed to qualify the whole contour of a vessel. Those portions of the contour which are not encompassed by the classification are described verbally.

Slightly different contour definitions are applied to vessels of unrestricted and restricted character (cf. fig. 1).

Unrestricted, constricted contour.

When the contour of an unrestricted vessel does not in-

clude any angular transitions or horizontal ledges, unless these are purely decorative or caused by a wavy configuration of the wall, and is built up from divergent (Nordström, 1973, p. 70 and Pl. 8) portions only, it is regarded as constricted if the portion immediately below the unmodeled or the modeled rim (cf. 8, "Type of rim", below) consists of a convex curve.

Unrestricted, flaring contour.

When the contour of an unrestricted vessel does not include any angular transitions or horizontal ledges, except for the reasons mentioned above, and is built up from divergent portions only, it is regarded as flaring if the portion immediately below the unmodeled or the modeled rim consists of a concave curve.

Unrestricted, composite contour.

Regardless of whether the portion of the contour of an unrestricted vessel consists of a convex or a concave curve, immediately below the unmodeled or the modeled rim, the contour is regarded as composite if it is built up from divergent portions only and includes angular transitions or ledges not regarded as decorative.

Unrestricted, complex contour.

Regardless of whether the portion of the contour of an unrestricted vessel consists of a convex or a concave curve, immediately below the unmodeled or the modeled rim, the contour is regarded as complex if it contains convergent portions. The presence of angular and smooth trans-

itions or ledges on the contour, is in this case regarded as an alternative.

This category of contour is of more relevant importance to Mesopotamian pottery, than for Nubian.

Restricted, simple contour.

If the part of the contour of a restricted vessel situated above its Md consists of convergent portions made up of convex curves only and is completed with a modeled or an unmodeled rim, the contour is regarded as simple.

In this case no reference is made to whether this convex curve continues below the Md or is by means of an angular or a smooth transition converted there into a concave one.

Restricted, necked contours.

If the part of the contour of a restricted vessel situated above its Md includes a divergent portion or consists of or includes a concave curve, complemented by a modeled or an unmodeled rim, the contour is regarded as necked.

Due to the fact that the wall of this portion may have a different inclination, the necked contours may encompass either flaring necks (i.e. those turned outwards) or non-flaring necks (i.e. those leaning inwards).

Definition of the neck.

If the beginning of the neck is not emphasized by means of a conspicuous angular transition or a horizontal ledge, it is determined by means of an auxiliary geometrical con-

struction (cf. fig. 2:a).

This construction is a modified version of that used by Bohmers (1964, pp. 63f., fig. 6) to define the "rim angle" of the Frisian jars.

Instead of using the rim as the starting point for the tangent line to the vessel's body, the level of the smallest diameter on the vessel's contour above the Md is used. From here downwards a tangent line to the body is drawn. The point at which the contour of the vessel's upper portion reaches the maximum deviation from the above mentioned tangent line, is called the deviation point (d) and regarded as the point at which an unemphasized neck begins, i.e. as the transition between the body and the neck.

4. Position of the Md.

The vertical position of a vessel's Md in relation to its height (measured from the base upwards to the uppermost point of the rim) is most essential for the general appearance of its shape, i.e. to determine whether it is spherical, ellipsoid or ovaloid (Shepard, 1956, fig. 23).

As the position of the Md of unrestricted vessels (cf. 2. "Character", above) is always at the rim, this stage can be omitted for the unrestricted shapes.

In the case of the restricted vessels, the position of the Md can be:

High, if located above the level of 65% of the total height.

Medium high, if located at any level between 30 and 65 % of the total height.

Low, if located at level, below 30% of the total height.

5. Width of orifice.

The relation between the Md and the smallest diameter on the upper portion of the contour of a vessel above its Md, designates the width of the orifice.

If there is no smaller diameter above the Md, the vessel is unrestricted and this stage can be omitted.

In the case of the restricted vessels three different categories of the width of the orifice have been distinguished.

Wide orifice, if the smallest diameter exceeds 2/3 (= 67%) of the Md.

Medium wide orifice, if the smallest diameter is between 1/3 and 2/3 (= 34-66%) of the Md.

Narrow orifice, if the smallest diameter is less than 1/3 (= 33%) of the Md.

6. Type of base.

The initial classifier for the bases reflects the vessel's ability to stand unsupported on a hard horizontal surface. For this ability, three main categories of bases are distinguished.

Flattened base, consisting of a platform sometimes slightly convex, or a base-ring which makes it possible for the vessel to stand upright.

Pointed base, which consists of a corner point or a convex curve with very strong profilation depriving the vessel of the ability to stand upright.

Rounded base, consisting of a smooth convex curve, having the same degree of profilation as the rest of the contour below the Md, a fact which makes it possible for the vessel to stand, in practically any position - sideways

or upright.

Due to the difficulties in defining the strength of the profilation, to facilitate the procedure of classification, pointed bases, unless consisting of a corner point, can be treated with rounded ones.

The above mentioned categories are divided into base types, which are specific for certain cultural environments and therefore relegated to the description of the pottery type (N.B. not the shape).

7. Width of base.

The width of the base is calculated and determined in the same manner as the width of the orifice (cf. 5., above). Consequently, the width categories of the base are:

Broad (corresponding to wide orifice).

Medium broad (corresponding to medium wide orifice).

Narrow (corresponding to narrow orifice).

As noted, the width of the orifice is only of essential importance for restricted vessels. The width of the base is regarded as more important for the classification of unrestricted vessels than for restricted ones, for which it is regarded as an alternative.

8. Type of rim.

The elaboration of the upper termination of the vessel's wall is the basis for the determination of the main categories of types of rim.

Terminations not displaying a conspicuous thickening or an angular transition visible on the exterior surface, are considered unmodeled rims.

Terminations having a conspicuous thickening or display-

ing angular transitions on their exterior surface, are considered modeled.

These main catefories are divided into types, direct rims or lip-rims (Shepard, 1956, pp. 245 f.), which in a similar manner as the base types are of importance in the determination of a certain cultural environment and therefore described in connexion with the pottery type.

9. Height of neck.

As noted in connexion with the definition of the position of the Md (cf. 4, above), the limits of its high position have been made larger than for its low position. This is because of the fact that the majority of restricted shapes display a neck which greatly affects the general appearance of the shape.

The height of the neck is therefore a very essential trait for the classification of restricted shapes. Its importance is also emphasized by the fact that its presence as well as its position can be established - a very important point to be taken into consideration when classifying the sherds.

With this statement in mind, the neck is regarded as a separate part of the shape, and its proportions are calculated in relation to the measurements of the neck itself and not to those of the total vessèl. It has proved to be most rewarding to choose the Rd as the constant in the determination of the neck proportions, height and width. The height equals the distance from the level of the d-point to the level of the uppermost termination of the rim.

In accordance with their non-presence or presence and their height-ratio, necks are divided into the following categories:

No neck. Only in combination with simple contours, which can only have a modeled or an unmodeled rim.

Very short neck. In combination with necked contours having a height less than 30% of the Rd.

Short neck. In combination with necked contours having a height varying between 31 and 69% of the Rd.

Tall neck. In combination with necked contours having a height varying between 70 and 100% of the Rd.

Very tall neck. In combination with necked contours having a height exceeding the Rd.

10. Width of neck.

The width of the neck in relation to the total measurements of the vessel is reflected by the width of the orifice (cf. 5, above).

In order to provide another dimension for the classification of the sherds, the smallest diameter of the upper portion of a vessel above the Md is compared with the Rd and this relationship expressed in percentages of it.

Only two categories of the width of the neck are distinguished, named:

Narrow neck, if its minor diameter is less than 70% of the Rd.

Broad neck, if its minor diameter is more than 70% of the Rd.

11. Width and depth of the vessel (= the shape index).

The ratio between the total height and the Md, calculated according to the formula $\frac{100\ Md}{\text{total height}}$, is regarded as the shape index of a vessel. In the case of restricted vessels, it reflects the degrees of the width, and in the

case of unrestricted vessels those of the depth.

Restricted vessels are divided into the following categories:

Flat shapes (F), if their shape index is more than 200.

Very broad shapes (V), if their shape index varies between 110 and 200.

Broad shapes (B), if their shape index varies between 80 and 110.

Medium broad shapes (M), if their shape index varies between 60 and 80.

Slender shapes (S), if their shape index is less than 60.

The unrestricted vessels are accordingly divided into the following categories:

Shallow shapes (S), if their shape index is more than 250.

Medium deep shapes (M), if their shape index varies between 200 and 250.

Deep shapes (D), if their shape index varies between 100 and 200.

Very deep shapes (V), if their shape index is less than 100.

12. Transitions.

As Stated above (cf. 3, "Contour"), a transition between different curves can be either smooth, angular or consist of a ledge. Similar transitions may occur between different parts of a vessel, as e.g. between the upper and the lower body and between the body and the neck (cf. fig. 2:b). The first-mentioned coincides always with the Md and the latter, if not emphasized by means of an angular transition or a ledge, with the d-point.

Different material may advocate the priority of using either the first or the second alternative just mentioned.

With Nubian pottery it has proved to be more rewarding to choose the second, thus giving priority to the importance of the description of the transition between the body and the neck. On vessels not displaying a neck, i.e. unrestricted and restricted with simple contour, if found to be necessary, other transitions can be used in this connexion.

Classification into shape modes.

The treatment of the traits defined above, one by one and in a certain order, omitting some and accepting others, makes it possible to construct a grid system by means of which the combinations of these traits can be codified (cf. figs. 3-10).

The code reflects the characteristics of a "shape mode", which objectively describes the general characteristics of a vessel's shape, leaving some unessential details to be described verbally outside the classification process.

The combination of the traits put in the grid vertically are numbered separately from 1 upwards for each different character of a combination of character with a particular function indicator.

By complementing this code number with the letters reflecting the shape index as well as the transitions and putting them horizontally in the grid, a full code is obtained.

By means of appropriate symbols, the occurrence of particular shape modes in a particular cultural environment can be easily marked in the grid system. The system is flexible, as it also makes it possible to introduce such

shape modes which will appear later.

Conclusions.

The above-mentioned method of classification of pottery shapes can be applied as follows:

1. No nick-names for the shapes are given, the code for the shape mode being the only symbol for the characteristics encompassed by it.
2. Classification can be easily carried out by a computor.
3. With a particular program, it can give a verbal equivalent for each code of a shape mode by listing the characteristics.
4. These verbal equivalents are objective and avoid the discrepancies in connexion with the difference in the denomination of different shapes by different modern languages.
5. This method of classification provides a possibility for each language to define the shape modes encompassed by a certain term existing in its pottery-shape vocabulary.
6. It provides an objective basis for a statistical approach to the frequency of the different shape modes or their details in certain periods of a certain cultural environment.
7. It also permits to a certain extent the use of the sherd material for the above-mentioned statistical calculations.
8. By not encompassing all the details, this method provides a possibility for rendering after the classification a more precise differentiation of the shapes in order to answer the demands of a relative chronology reflecting their evolution.

Demonstration.

In order to demonstrate the application of the present method of classification to Mesopotamian pottery, I have chosen Pls. CXL - CXLV in Salonen's book: "Die Hausgeräte ...., T. II" (1966, illustrating the pottery from the 7th stratum at Tepe Gaura and the 6th stratum at Šibaniba, shapes showing resemblance to those of the pottery from Sudanese Nubia, which has been the subject of my investigations.

A. Illustrating a pottery assemblage.

Altogether 33 pieces of pottery have been analyzed and introduced into the grid system in figs. 3-10. This has been done only to demonstrate how to illustrate a pottery assemblage with a limited cultural origin, well aware of the fact that 33 pieces, although probably the most typical, do not cover all the possible shape modes, occurring in the above-mentioned context at Tepe Gaura and Šibaniba.

B. Illustrating the decodification of the shape-mode codes.

The following list of the above-mentioned codified pieces of pottery has been prepared to demonstrate how the codes obtained form the grids can be decodified by rendering their verbal equivalents.

It is to be noted that for the reason of simplicity in the present article all shape modes are regarded as not having any function indicators (stage 2.). Where such indicators occur, they are not codified but described ver-

bally before the first letter in the code indicating the character of the vessel (stage 1.).

Unrestricted vessels.

Shape mode: U-2-M/D (= Pl. CXL:7).
"Medium deep, unrestricted vessel with a constricted orifice, a modeled rim and a rounded base".

Shape mode: U-5-M/D (= Pl. CXL:1 and 10).
"Medium deep, unrestricted vessel with a constricted orifice, an unmodeled (Note. The traits differing from those of the previous shape mode are underlined.) rim and a flattened base".

Shape mode: U-9-M/D (= Pl. CXL:9).
"Medium deep, unrestricted vessel with a flaring orifice, an unmodeled rim and a pointed base".

Shape mode: U-17-D/C (= Pl. CXLI:3).
"Deep, unrestricted vessel with a composite contour, an unmodeled rim and a rounded base".

Shape mode: U-25-S/D (= Pl. CXL:5).
"Shallow, unrestricted vessel with a complex contour, an unmodeled rim and a rounded base".

Restricted vessels.

Shape mode: R-7-V/D (= Pl. CXL:11).
"Very broad, restricted vessel with a wide orifice (= semi-restricted) and a simple contour, a high Md and an unmodeled rim".

Shape mode: "Handled" R-7-V/D (= Pl. CXLIV:2).
"Very broad, handled (Note. The traits differing from those of the previous shape mode are underlined.), restricted vessel with a wide orifice (= semi-restricted) and a simple contour, a high Md and an unmodeled rim".

Shape mode: R-8-V/D (= Pl. CXL:2).
"Very broad, restricted vessel with a wide orifice (= semi-restricted) and a simple contour, a medium high Md and a modeled rim".

Shape mode: R-10-M/D (= Pl. CXLV:6).
"Medium broad, restricted vessel with a medium wide orifice and a simple contour, a medium high Md and a modeled rim".

Shape mode: R-16-B/D (= Pl. CXL:8).
"Broad, restricted vessels with a medium wide orifice and a simple contour, a low Md and a modeled rim".

Shape mode: R-31-F/D (= Pl. CXL:4 and 6).
"Flat, restricted vessel with a wide orifice (= semi-restricted) and a necked contour, a medium high Md and a very short and broad, non-flaring neck with smooth transition".

Shape mode: R-61-V/L (= Pl. CXLIV:4).
"Very broad, restricted vessel with a medium wide orifice and a necked contour, a high Md and a very short and broad flaring neck with ledge transition".

Shape mode: R-73-V/C (= Pl. CXLI:7).
"Very broad, restricted vessel with a wide orifice (= semi-

restricted) and a necked contour, a medium high Md and a short and broad flaring neck with smooth transition".

Shape mode: R-79-V/D (= Pl. CXLII:1 and 2).
"Very broad, restricted vessel with a medium wide orifice and a necked contour, a medium high Md and a very short and broad flaring neck with smooth transition".

Shape mode: R-79-B/D (= Pl. CXLII:3).
"Broad, restricted vessel with a medium wide orifice and a necked contour, a medium high Md and a very short and broad flaring neck with smooth transition".

Shape mode: R-79-B/C (= Pls. CXLI:1 and 5 and CXLIII:1 and 4).
"Broad, restricted vessel with a medium wide orifice and a necked contour, a medium high Md and a very short and broad flaring neck with angular transition".

Shape mode: R-79-M/C (= Pl CXLIII:5).
"Medium broad, restricted vessel with a medium wide orifice and a necked contour, a medium high Md and a very short and broad flaring neck with angular transition".

Shape mode: R-80-B/D (= Pl. CXLIV:3).
"Broad, restricted vessel with a medium wide orifice and a necked contour, a medium high Md and a short and broad flaring neck with smooth transition".

Shape mode: R-80-B/C (= Pl. CXLI:8).
"Broad, restricted vessel with a medium wide orifice and a necked contour, a medium high Md and a short and broad flaring neck with angular transition".

Shape mode: "Spouted" R-80-B/C (= Pl. CXLI:9).
"Broad, spouted, restricted vessel with a medium wide orifice and a necked contour, a medium high Md and a short and broad flaring neck with angular transition".

Shape mode: R-80-B/L (= Pl. CXLIV:1).
"Broad, unrestricted vessel with a medium wide orifice and a necked contour, a medium high Md and a short and broad flaring neck with ledge transition".

Shape mode: R-80-M/C (= Pl. CXLI:6).
"Medium broad, restricted vessel with a medium wide orifice and a necked contour, a medium high Md and a short and broad flaring neck with angular transition".

Shape mode: R-80-S/D (= Pl. CXLIII:3).
"Slender, restricted vessel with a medium wide orifice and a necked contour, a medium high Md and a short and broad flaring neck with smooth transition".

Shape mode: R-81-M/D (= Pl. CXLIII:2).
"Medium broad, restricted vessel with a medium wide orifice and a necked contour, a medium high Md and a tall and broad flaring neck with smooth transition".

Shape mode: R-92-B/D (= Pl. CXL:3).
"Broad, restricted vessel with a wide orifice and a necked contour, a low Md and a short and broad flaring neck with smooth transition".

C. Illustrating the definition of the "nick-names".

In order to demonstrate how to define the "nick-names" given to the pottery in different languages, a certain amount of common English pottery names have been chosen and provided (N.B. subjectively) with the shape modes they are thought to encompass (cf. figs. 11-13). It is to be noted that the names are tentative and introduced in this case only for purposes of demonstration.

"Nick-name":	Defining shape modes:
"Composite cups"	- U-25-S/D and R-31-F/D.
"Simple cups"	- U-2-M/D and U-5-M/D.
"Bowls"	- R-7-V/D, R-8-V/D and R-73-V/C.
"Goblets"	- U-17-D/C and R-74-V/D.
"Decanters"	- R-16-B/D and R-92-B/D.
"Globular jars"	- R-79-B/D and B/C, R-80-B/D, B/C and B/L.
"Ovoid jars"	- R-79-M/C and R-80-M/C.
"Bottles"	- R-81-M/D.
"Vases"	- R-80-S/D.
Anomalous	- U-9-M.
"Simple jars"	- R-10-M/D.
"Carinated jars"	- R-79-Y/D and R-61-V/L.

Bibliography.

Adams, W.Y., Classification of Christian Nubian pottery. Kush X, pp. 245-288. Khartoum & London, 1962.

Adams, W.Y., An Introductory Classification of Meroitic Pottery. Kush XII, pp. 126-173. Khartoum & London, 1964.

Bohmers, A., Statistics and Graphs in the Study of prehistoric Industries. "Paleohistoria", Vol. X. Gro-

ningen, 1964.

Braichevsky, A method practiced by him at the archaeological department of Kiev University (USSR) was reported to me by Prof. T. Säve-Söderbergh in 1966 and later demonstrated by my colleagues in Leningrad (1970), Erevan (1970) and Moscow (1972). The method consists "zooming" in the pottery silhouettes by means of a TV-camera and transferring the impulses to a data-card, which replaces the fluorescent screen. By keeping the distance between the object and the lens constant, the "zooming" makes it possible to estimate the size.

Deopik, D.V., Klassifikazija i statističeskij analiz keramičeskogo kompleksa u s. Kirovo.

Drevnosti Vostočnogo Kryma, pp. 60-96. Kiev, 1970.

Gardin, J.-C., Methods for the descriptive analysis of archaeological material. American Antiquity, Vol. 32., No. 1, pp. 13-30. 1967.

Hasselgren, S., Arkitekturens uttrycksmedel. Kungliga tekniska högskolans avhandlingar, Nr. 94. Stockholm, 1954. An English edition appeared later.

Nordström, H.-Å., Cultural Ecology and Ceramic Technology. Acta Universitatis Stockholmiensis, 4. Stockholm, 1973 (= chapters 1-3 in "Neolithic and A-group sites". SJE Publications, Vol. 3. Stockholm, 1973).

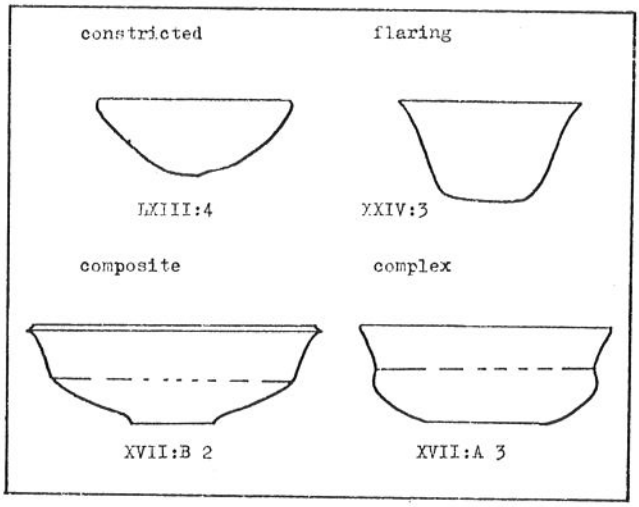
Salonen, A., Die Hausgeräte der alten Mesopotamier, Teil II. Annales Academiae Scientiarum Fennicae, Ser. B, Tom. 144. Helsinki, 1966.

Shepard, A., Ceramics for the archaeologist. Carnegie Institution of Washington, publication 609. Washington, D.C., 1956.

Traunecker, C., La description des formes. A paper given at the international symposium upon ancient Egyptian

pottery at Luxor (Egypt) in February, 1974.

Shape groups of unrestricted vessels.



Shape groups of restricted vessels.

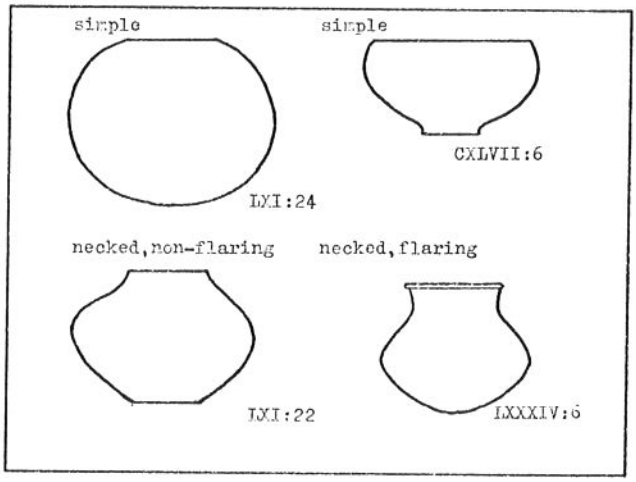
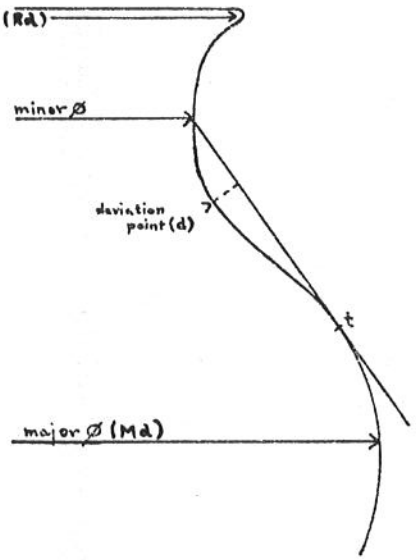


Fig. 1. The contours and the shape groups.
(The numbers refer at the Pls. in Salonen's "Hausgeräte ...", II.)

a. Deviation point.



b. Transitions.

D. Smooth C. Angular L. Ledge

Fig. 2. Definition of the deviation point and the qualities of the transitions.

Fig. 3. Unrestricted shapes with constricted and flaring orifice.
Note. Stage 12 refers in this case at the qualities of the transitions possibly present on the contour between the base and the rim.

Fig. 4. Unrestricted shapes with composite and complex contour.
Note. Stage 12 refers in this case at the qualities of the transitions possibly present on the contour between the base and the rim.

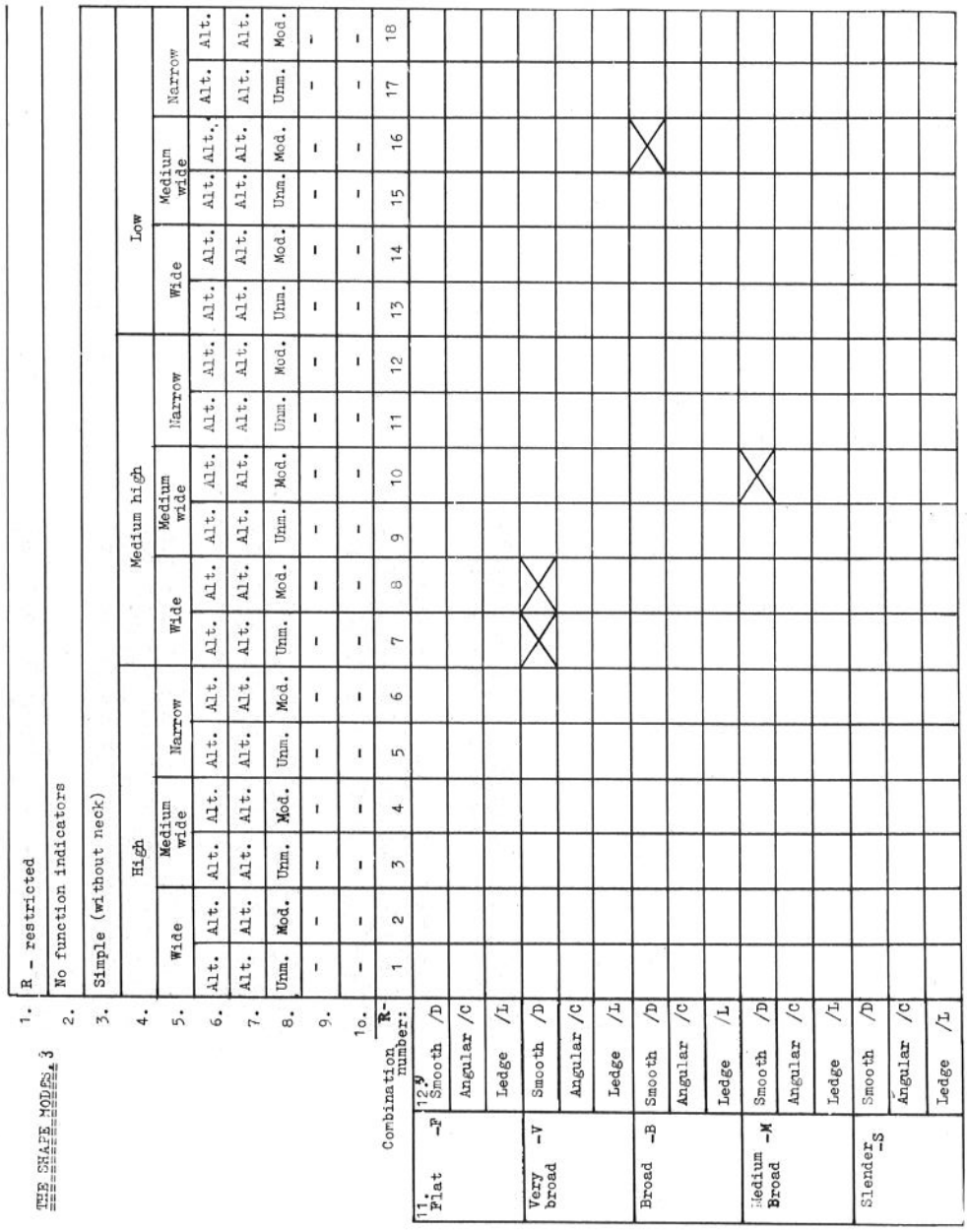


Fig. 5. Restricted shapes with simple contour.
Note. Stage 12 refers in this case at the qualities of the transitions possibly present on the contour between the Md and the rim. Non evidence of transition is marked as /D.

Fig. 6. Restricted shapes with necked, non-flaring contour.

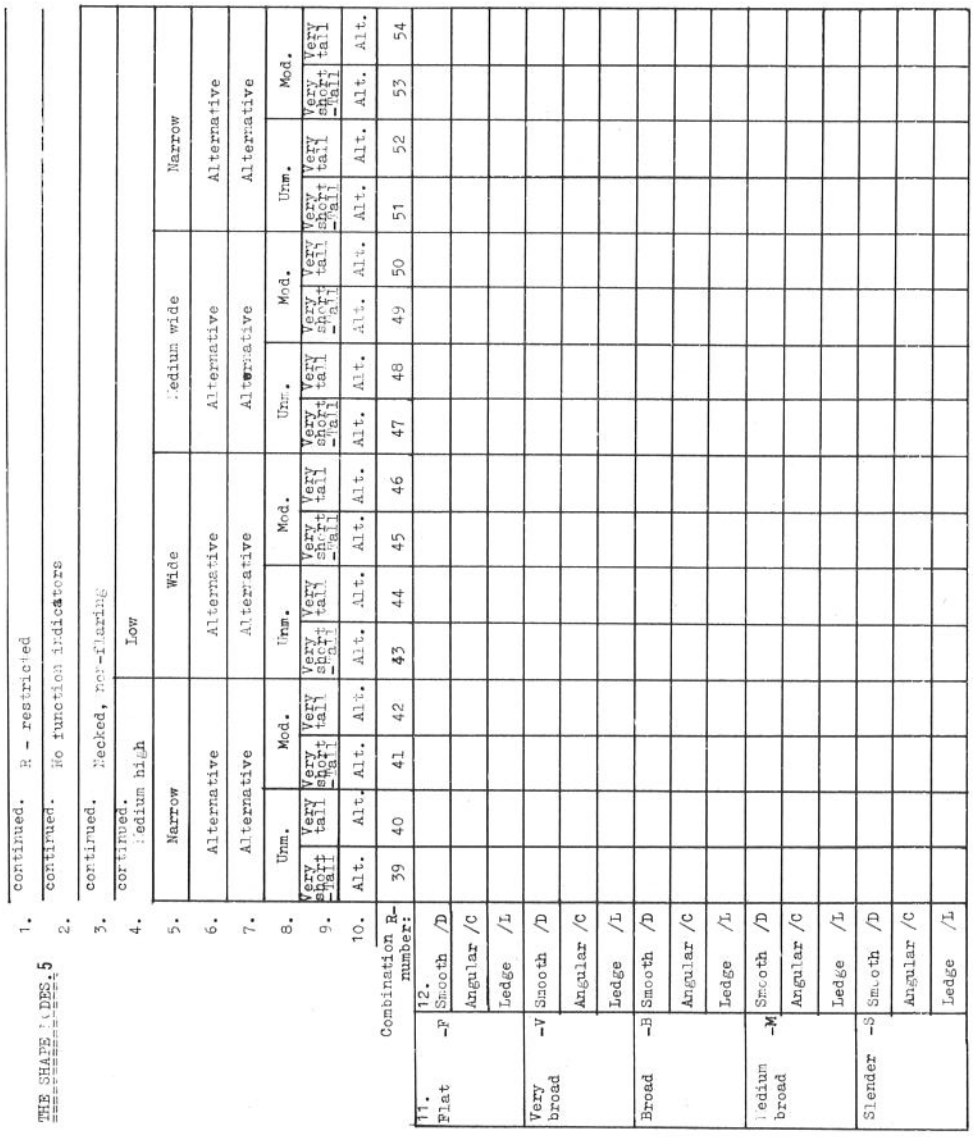


Fig. 7. Restricted shapes with necked, non-flaring contour (continued).

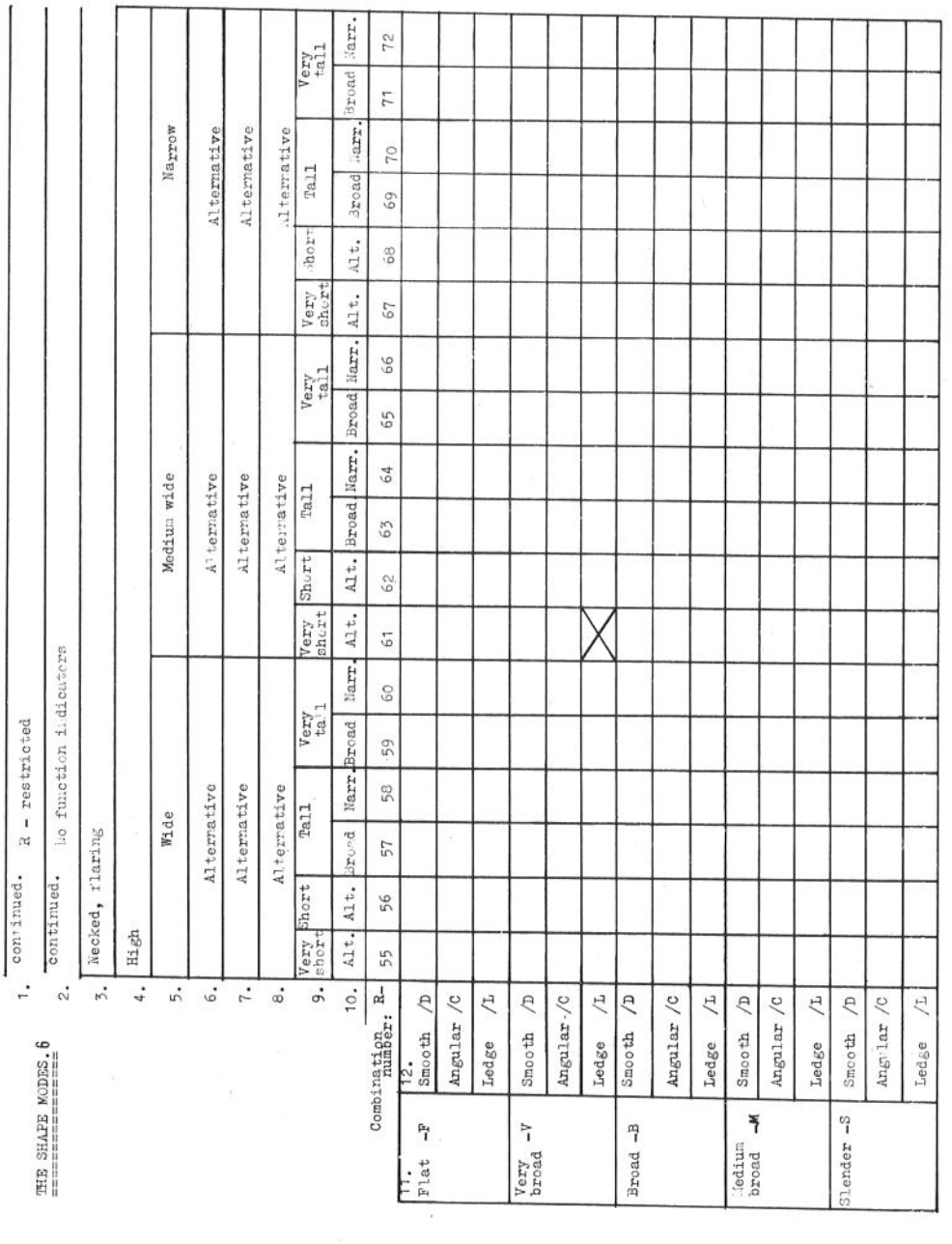


Fig. 8. Restricted shapes with necked, flaring contour and high position of Md.

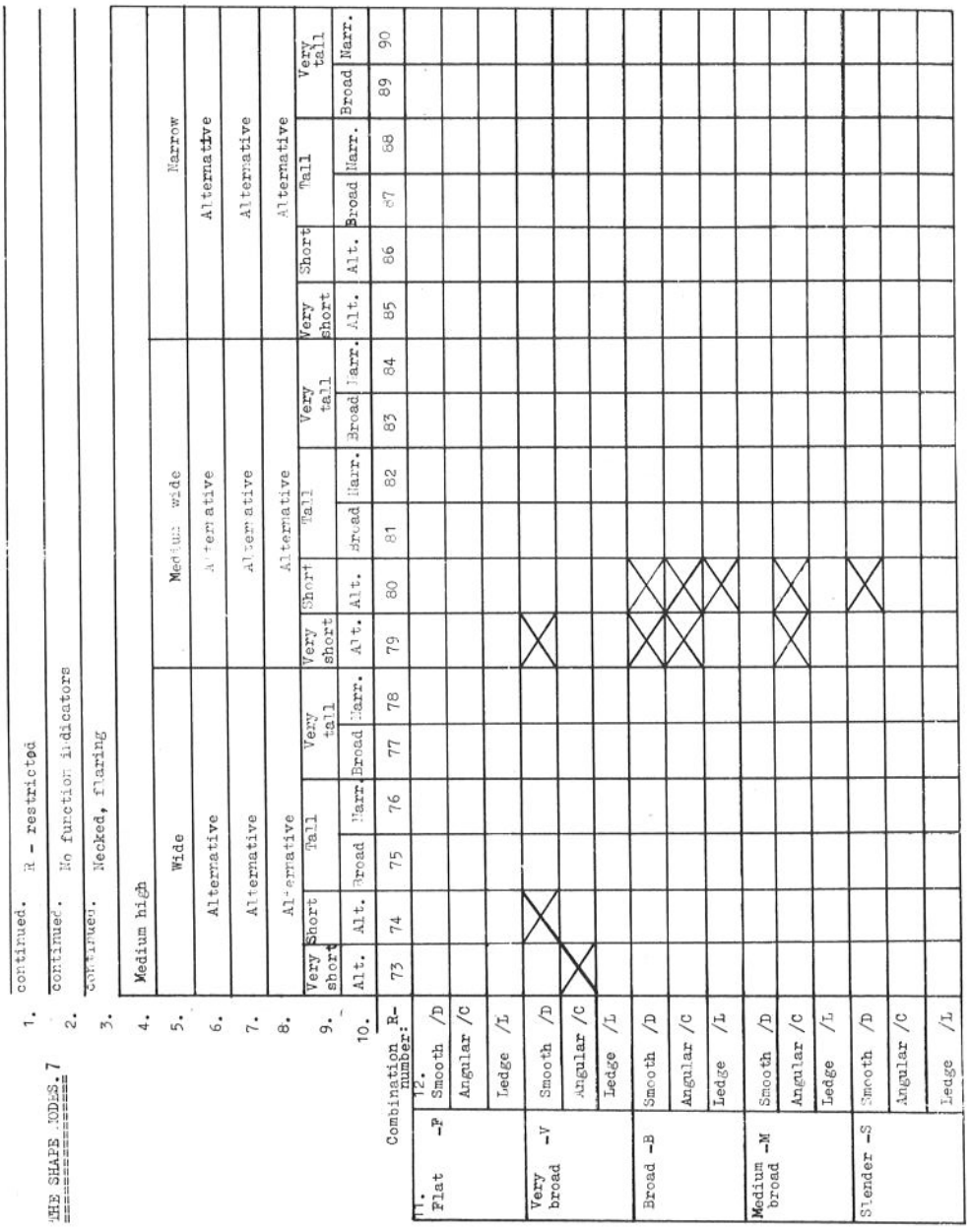


Fig. 9. Restricted shapes with necked, flaring contour and medium high position of Md.

THE SHAPE MODES. 8

	1.	Continued. R - restricted																	
	2.	continued. No function indicators																	
	3.	continued. Necked, flaring																	
	4.	Low																	
	5.	Wide						Medium wide						Narrow					
	6.	Alternative						Alternative						Alternative					
	7.	Alternative						Alternative						Alternative					
	8.	Alternative						Alternative						Alternative					
	9.	Very short	Short	Tall		Very tall		Very short	Short	Tall		Very tall		Very short	Short	Tall		Very tall	
	10.	Alt.	Alt.	Broad	Narr.	Broad	Narr.	Alt.	Alt.	Broad	Narr.	Broad	Narr.	Alt.	Alt.	Broad	Narr.	Broad	Narr.
	Combination number: R-	91	92	93	94	95	96	97	98	99	100	101	102	103	104	105	106	107	108
11. Flat -F	12. Smooth /D																		
	Angular /C																		
	Ledge /L																		
Very broad -V	Smooth /D																		
	Angular /C																		
	Ledge /L																		
Broad -B	Smooth /D		X																
	Angular /C																		
	Ledge /L																		
Medium broad -M	Smooth /D																		
	Angular /C																		
	Ledge /L																		
Slender -S	Smooth /D																		
	Angular /C																		
	Ledge /L																		

Fig. 10. Restricted shapes with necked, flaring contour and low position of Md.

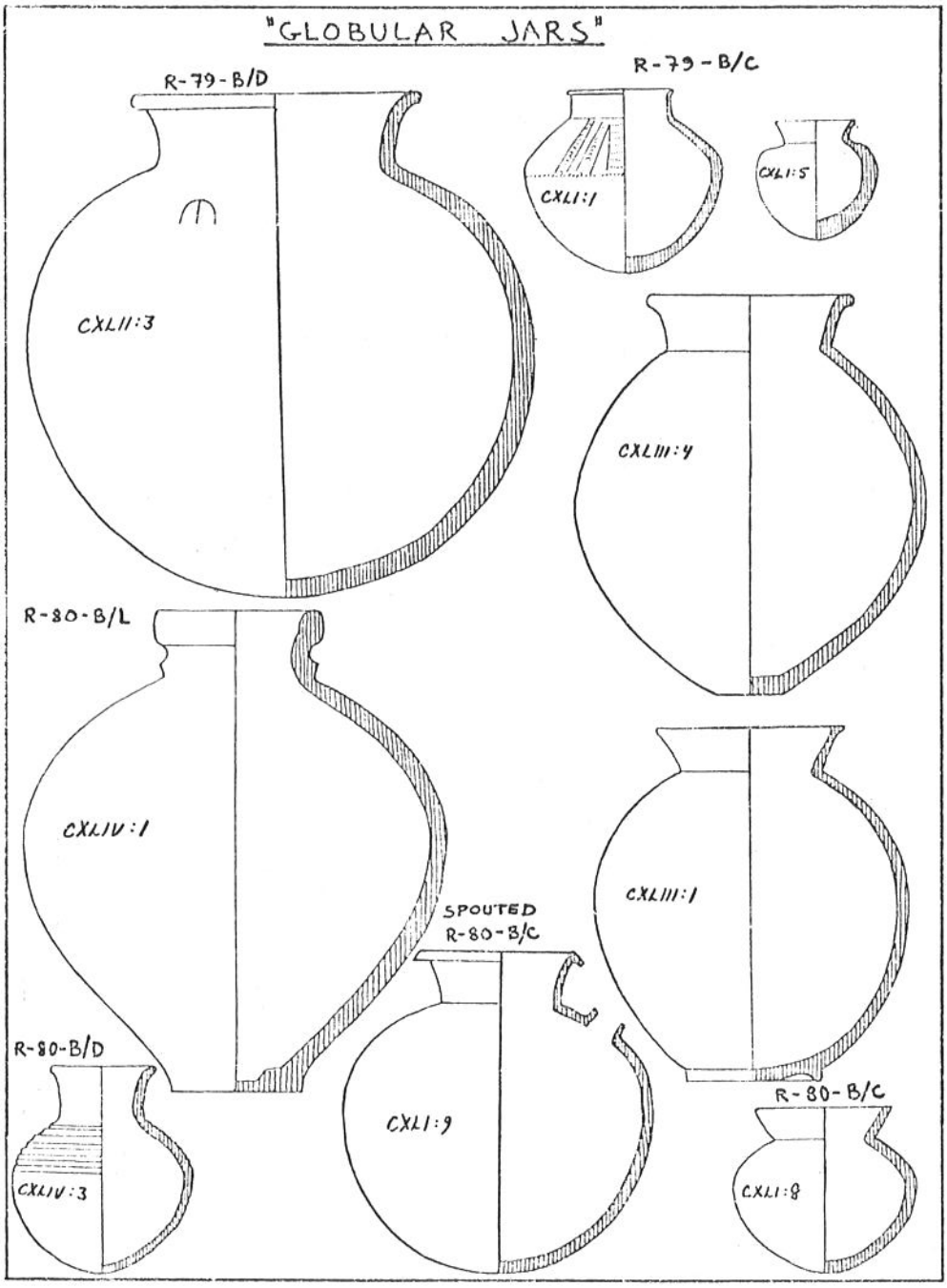


Fig. 11. "The nick-names" (demonstration C).

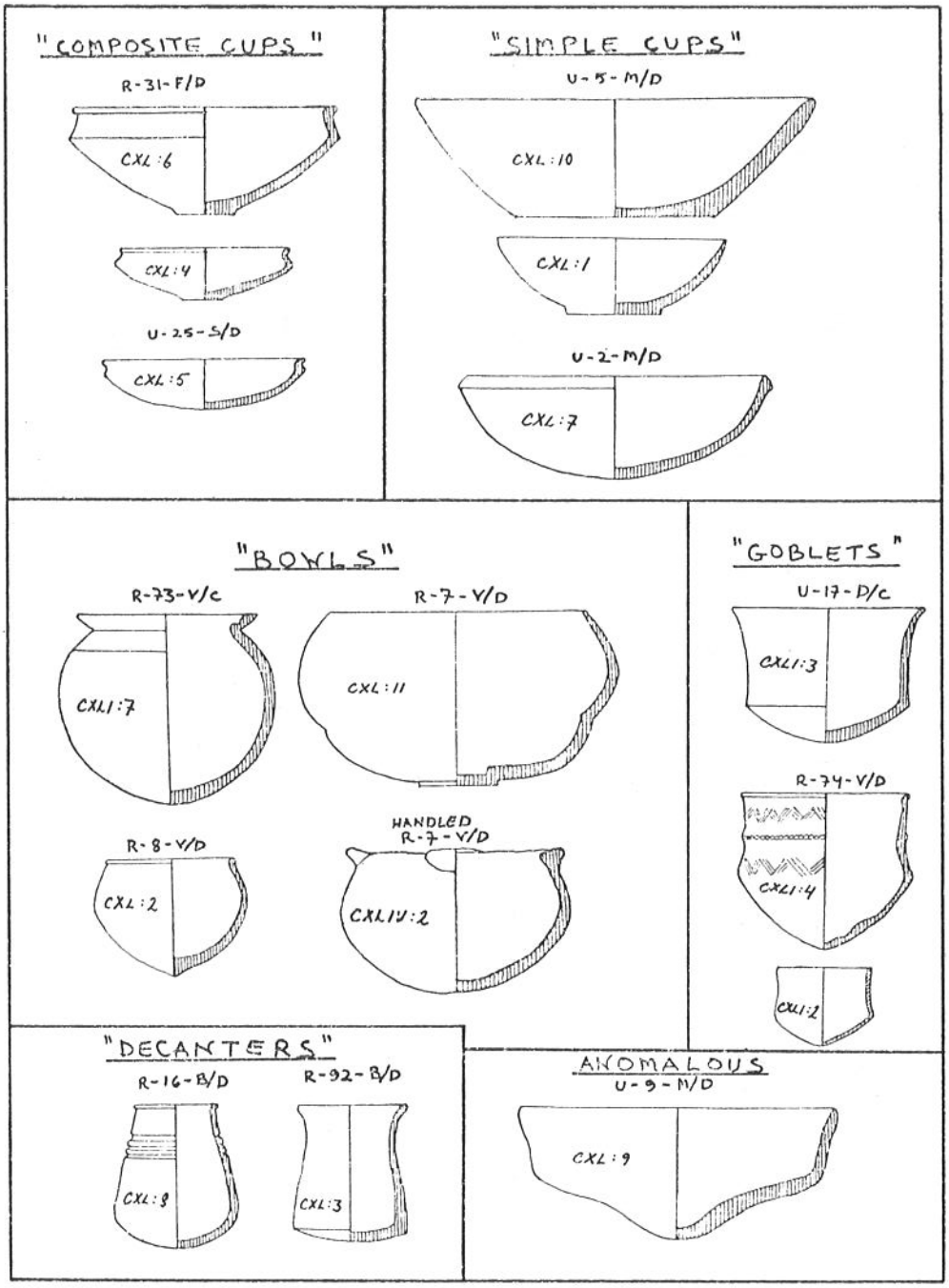


Fig. 12. "The nick-names" (demonstration C).

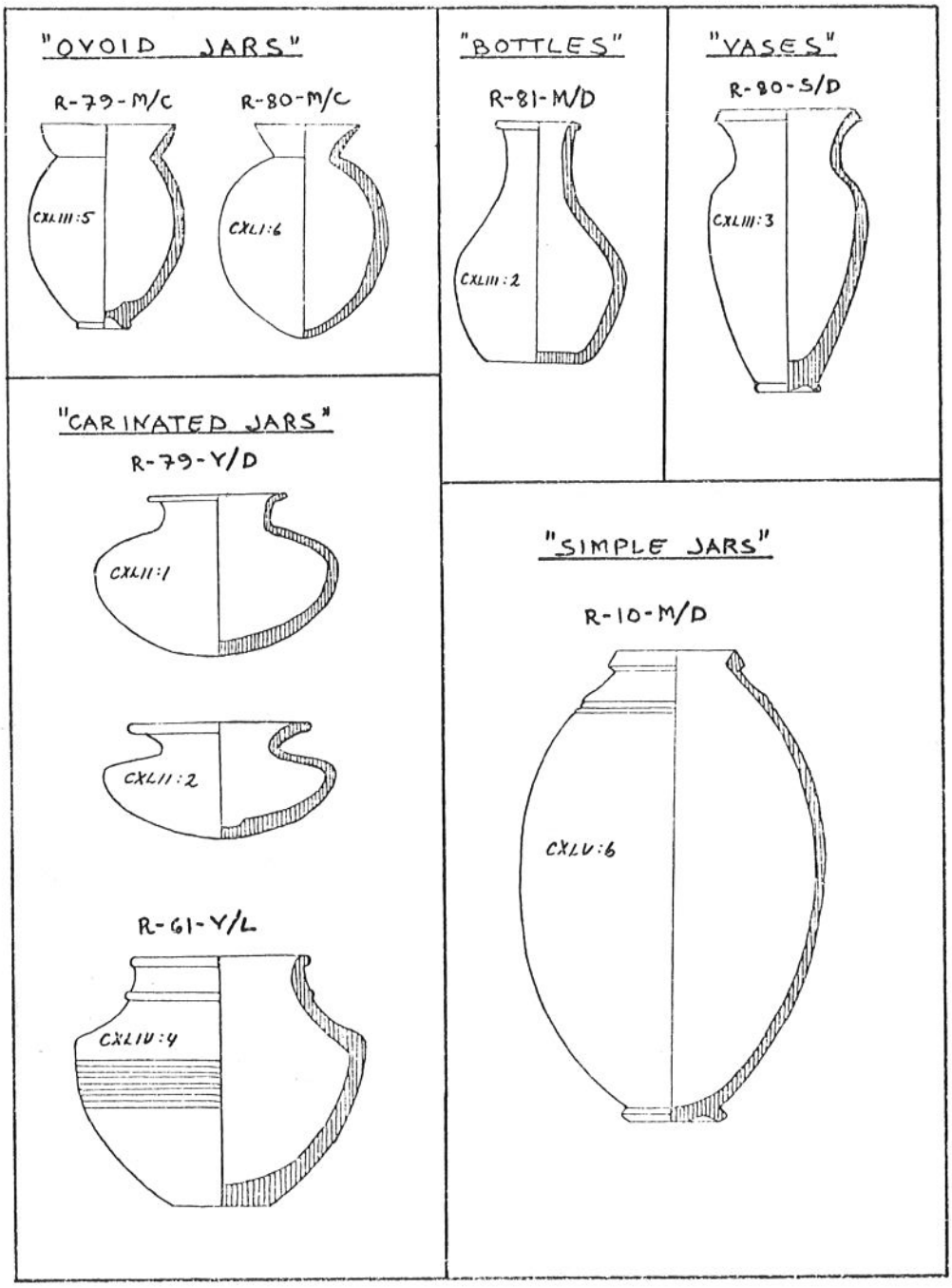


Fig. 13. "The nick-names" (demonstration C).